

REMARKS

Claims 1 and 3-13 are pending in this application. By this Amendment, claims 1, 3 and 10-13 are amended. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution); (c) satisfy a requirement of form asserted in the previous Office Action; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are made solely in response to the rejection under 35 U.S.C. §112, second paragraph, and are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Request for Interview

The undersigned requests a personal interview with the Examiner prior to further action.

II. Formal Matters

The Office Action rejects claims 1-13 [sic, 1 and 3-13] under 35 U.S.C. §112, second paragraph. Applicant asserts that the foregoing amendments to the claims obviate the grounds for this rejection. Moreover, the claims are readable on Fig. 1, which shows a frequency stabilized linear helium (He) neon (Ne) gas laser unit. Furthermore, although the Office Action objects to the language "in use" in the claims, Applicant respectfully notes that this language was deleted by the previous Amendment. Additionally, although the Office Action asserts that the claims do not "specify anything on Ne²⁰ and Ne²² isotopes to do with laser," Applicant respectfully notes that, in fact, the claims very clearly specify that the Ne²⁰

isotope and the Ne²² isotope are parts of a gas that fills a resonant cavity of the laser.

Accordingly, Applicant respectfully requests that the rejection of the claims under 35 U.S.C. §112, second paragraph, be withdrawn.

III. The Claims Define Patentable Subject Matter

The Office Action rejects claims 1-12 under 35 U.S.C. §102(b) over Sanders et al. (U.S. Patent No. 4,475,199) (Sanders). Applicant respectfully traverses this rejection.

In particular, Applicant asserts that Sanders does not disclose or suggest an optical apparatus comprising a frequency stabilized linear He Ne gas laser and at least one optical feedback element which receives light output from the laser and returns at least 0.1% of the light output of the laser towards the laser as recited in independent claim 1 and similarly recited in independent claims 10-13.

Specifically, Sanders discloses a multi-oscillator ring laser gyroscope (Zeeman ring laser gyroscope, Abstract), not a linear He Ne gas laser, as recited in independent claims 1 and 10-13.

Moreover, the Patent Office suggests that it is inherent that at least 0.1% of light output of the laser is returned towards the laser (page 3, lines 7-9). However, it seems that the Patent Office's interpretation of light output of the laser is different from the meaning of the light output in Applicant's invention. In Applicant's invention, the "0.1% of the light output of the laser" refers to the optical feedback or back reflection, which are light reflected from any optical element and reflected back to the laser cavity, which creates polarization destabilization, which is responsible for destabilization of the frequency of the laser light. In Applicant's invention, the gas mixture inside the laser cavity is capable of sustaining at least 0.1% of this kind of light back reflection.

In contrast to Applicant's invention, in Sanders, the light feedback referred to by the Patent Office is not light that is accidentally reflected back into the laser cavity but is in fact a

light detected by a cavity length control circuitry 48 (Fig. 1; col. 6, line 63 - col. 7, line 6) that provides an AC signal along leads 50 to the piezoelectric element 30, and the AC signal moves the mirror 22 in and out, resulting in variation of the cavity length of the ring laser 10, thus generating the detuning frequency of the gyroscope. Accordingly, the "light feedback" in Sanders is not the light that is accidentally reflected back into the laser cavity, but is a light signal that is used to control the cavity length based on that signal. Accordingly, the light feedback in Sanders and the light feedback in Applicant's invention are two different things, as would be clearly understood by those skilled in the art.

Finally, because Sanders teaches a ring laser gyroscope which is not designed to emit light, but is designed to function as a gyroscope, any amount of back scattered light into the laser cavity would in fact be fatal to the operation of the ring laser gyroscope. A very small amount of light is generated from the ring at mirror 20 (Fig. 1) for measuring the beat frequencies between the counter propagating beams and for frequency control purposes. However, it would be fatal to the operation of this type of laser to allow any significant light back into the laser ring. As such, levels of returned light of 0.1% and more, as recited in Applicant's claims 1 and 10-13, would cause the ring gyroscope to malfunction. Hence, a disclosure of this level of light returned to the laser is not inherent in Sanders. In Sanders, there is no mention of returning light into the ring laser because the ring laser would fail if light was returned into the laser cavity.

The Office Action seems to reject claims 1-2 and 6-9 over Deck (Office Action, page 3, line 5); however, there is no specific mention of the type of rejection of those claims over Deck. Furthermore, although the Office Action states that claims 1-12 are rejected over Sanders, the subsequent paragraphs do not identify Sanders as a reference. Moreover, Deck does not exhibit a Fig. 8 as alleged in the Office Action, and col. 9, lines 37-44 of Deck do not refer to any isotope mixture. Accordingly, Applicant assumes that the mention of Deck in

the Office Action is accidental, as further confirmed during a telephone interview with the Examiner, and that the relevant paragraphs and figures are those of Sanders.


For any of the reasons above, Applicant asserts that independent claims 1 and 10-13 define patentable subject matter. Accordingly, Applicant respectfully requests that the rejection of these claims and of their dependent claims be withdrawn.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1 and 3-13 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

J. Adam Neff
Registration No. 41,218

JAO::JAN:TMN/cmf

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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